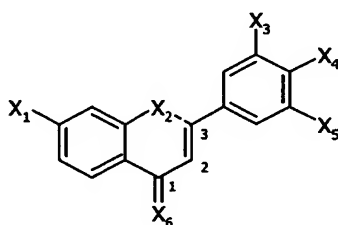


# CLAIMS

1- Composition for the treatment or prophylaxis of a pathology related to inflammation, neurodegeneration, deregulations of lipid and/or glucose metabolism, cell proliferation and/or differentiation and/or skin or central nervous system ageing, comprising, in a pharmaceutically acceptable support, at least one substituted 1,3-diphenylprop-2-en-1-one derivative represented by formula (I) below :



(I)

wherein :

X1 represents a halogen or a -R1 group or a group corresponding to the following formula : -G1-R1,

X2 represents a hydrogen atom or a thionitroso group or a hydroxy group or an alkylcarbonyloxy group or an unsubstituted alkyloxy group or a thiol group or an alkylthio group or an alkylcarbonylthio group, X2 can also represent an oxygen or sulfur atom bound to carbon 3 of the propene chain, so as to form a derivative of the type 2-phenyl-4H-1-benzopyran-4-one,

X3 represents a -R3 group or a group corresponding to the following formula : -G3-R3,

X4 represents a halogen or a thionitroso group or a -R4 group or a group corresponding to the following formula : -G4-R4,

X5 represents a -R5 group or a group corresponding to the following formula : -G5-R5,

5 X6 is an oxygen atom or a nitrogen atom, in the case where X6 is a nitrogen atom, it carries a hydrogen atom or a hydroxy group or an alkyloxy group,

10 R1, R3, R4, R5, which are the same or different, represent a hydrogen atom or an alkyl group substituted or not by a substituent which is part of group 1 or group 2 defined hereinbelow,

G1, G3, G4, G5, which are the same or different, represent an oxygen or sulfur atom,

15 with at least one of the groups X1, X3, X4 or X5 corresponding to the formula -G-R, and

20 with at least one of the groups R1, R3, R4 or R5 present in the form of an alkyl group containing at least one substituent from group 1 or 2, said alkyl group being bound directly to the ring or being associated with a group G according to the formula -GR,

25 the substituents from group 1 are selected in the group consisting of carboxy groups having the formula : -COOR<sub>6</sub> and carbamoyl groups having the formula : -CONR<sub>6</sub>R<sub>7</sub>,

the substituents from group 1 are selected in the group consisting of sulfonic acid (SO<sub>3</sub>H) and sulfonamide groups having the formula : -SO<sub>2</sub>NR<sub>6</sub>R<sub>7</sub>

30 with R<sub>6</sub> and R<sub>7</sub>, which are the same or different, representing a hydrogen atom or an alkyl group possibly substituted by at least one group of type 1 or 2,

with the exception of compounds represented by formula (I) in which :

- $X_1$ ,  $X_2$ ,  $X_3$  and  $X_5$  each represent a hydrogen atom,  $X_6$  represents an oxygen atom and  $X_4$  represents a group corresponding to the formula  $-O-CR_8R_9-COOR_{10}$ , where  $R_8$  and  $R_9$ , which are the same or different, represent a C1 to C2 alkyl group (comprising one or two carbon atoms), and  $R_{10}$  represents a hydrogen atom or a C1 to C7 group,
  - $X_2$ ,  $X_3$  and  $X_5$  each represent a hydrogen atom,  $X_1$  represents a halogen atom or a R1 or -G1R1 group, where R1 represents an unsubstituted C1 to C2 alkyl group and G1 represents an oxygen atom,  $X_6$  represents an oxygen atom and  $X_4$  represents a group corresponding to the formula  $-O-CR_{11}R_{12}-COOR_{10}$ , where  $R_{11}$  and  $R_{12}$ , which are the same or different, represent a hydrogen atom or a C1 to C2 alkyl group, and  $R_{10}$  represents a hydrogen atom or a C1 to C7 alkyl group (comprising one to seven carbon atoms), and
  - $X_2$  represents a hydrogen atom and  $X_1$  represents -G1R1 where G1 represents an oxygen atom and R1 represents  $CH_2COOH$ ,
- the optical and geometrical isomers, racemates, tautomers, salts, hydrates and mixtures thereof.

2- Composition according to claim 1, characterized in that the derivatives can correspond to the cis or trans conformation or a mixture thereof.

3- Composition according to claim 1, characterized in that none of the groups  $X_3$ ,  $X_4$  and  $X_5$  represents a hydrogen atom.

4- Composition according to claim 1, characterized in that one or two of the groups  $X_3$ ,  $X_4$  and  $X_5$  represents a hydrogen atom and  $X_1$  is an unsubstituted alkyl group.

5- Composition according to claim 1, characterized in that one or two of the groups  $X_3$ ,  $X_4$  and  $X_5$  represents a hydrogen atom and  $X_2$  is a thionitroso group or an alkylcarbonyloxy group or a thiol group or an alkylthio group or an alkylcarbonylthio group,  $X_2$  can also represent an oxygen or sulfur atom bound

to carbon 3 of the propene chain, so as to form a derivative of the type 2-phenyl-4H-1-benzopyran-4-one.

5        6- Composition according to claim 1, characterized in that one or two of the groups X3, X4 and X5 represents a hydrogen atom and at least one of the groups X1, X3, X4 or X5 is the GR form in which G is a sulfur atom.

10       7- Composition according to any one of the previous claims, characterized in that one or two of the groups X3, X4 and X5 represents a hydrogen atom and at least one of the groups X1, X3, X4 or X5 is the –G-R form in which G is an oxygen atom and R is an alkyl group substituted by a substituent from group 1 in which R6 is not a hydrogen atom.

15       8- Composition according to any one of the previous claims, characterized in that one or two of the groups X3, X4 and X5 represents a hydrogen atom and at least one of the groups X1, X3, X4 or X5 is the –G-R form in which G is an oxygen atom and R is an alkyl group substituted by a sulfonamide such as defined in claim 1.

20       9- Composition according to any one of the previous claims, characterized in that X4 is a thionitroso group or a –R4 group or a group corresponding to the formula –G4-R4, G4 and R4 being such as defined in claim 1.

25       10- Composition according to any one of the previous claims, characterized in that X2 is a thionitroso group or a hydroxy group or an alkyloxy or a thiol group or an alkylthio group.

30       11- Composition according to any one of the previous claims, characterized in that X4 is a thionitroso group or a –R4 group or a group corresponding to the formula –G4-R4 and X2 is a thionitroso group or a hydroxy

group or an alkyloxy group or a thiol group or an alkylthio and, G4 and R4 being such as defined in claim 1.

12- Composition according to any one of claims 1 to 6, characterized in  
5 that X1 represents a -R1 group or a group corresponding to the formula -G1-R1, where R1 is an alkyl group substituted by a substituent which is part of group 1 and G1 and the substituent from group 1 being such as defined in claim 1.

13- Composition according to any one of the previous claims,  
10 characterized in that X1 is a -G1-R1 group.

14- Composition according to any one of claims 1 to 12, characterized in that X1 is a -G1-R1 group in which G1 is an oxygen atom.

15 15- Composition according to any one of the previous claims, characterized in that X1 represents a -R1 group or a group corresponding to the formula -G1-R1, where R1 is an alkyl group substituted by a substituent which is part of group 2 and G1 and the substituent from group 2 being such as defined in claim 1.

20

16- Composition according to any one of the previous claims, characterized in that X3 represents a -R3 group or a group corresponding to the formula -G3-R3, where R3 is an alkyl group substituted by a substituent which is part of group 1 and G3 and the substituent from group 1 being such as  
25 defined in claim 1.

17- Composition according to any one of claims 1 to 15, characterized in that X3 represents a -R3 group or a group corresponding to the formula -G3-R3, where R3 is an alkyl group substituted by a substituent which is part of  
30 group 2 and G3 and the substituent from group 2 being such as defined in claim 1.

18- Composition according to any one of the previous claims, characterized in that X4 represents a -R4 group or a group corresponding to the formula -G4-R4, where R4 is an alkyl group substituted by a substituent which is part of group 1 and G4 and the substituent from group 1 being such as  
5 defined in claim 1.

19- Composition according to any one of the previous claims, characterized in that X4 is a -G4-R4 group.

10 20- Composition according to any one of the previous claims, characterized in that X4 is a -G4-R4 group in which G4 is an oxygen atom.

21- Composition according to any one of the previous claims, characterized in that X4 is a -G4-R4 group in which G4 is an oxygen atom, and  
15 X3 or X5 respectively represent R3 or G3R3, on the one hand, and R5 or G5R5, on the other hand, with R3 and R5 being alkyl groups having a substituent from group 1.

22- Composition according to any one of the previous claims, characterized in that X4 represents a -R4 group or a group corresponding to the  
20 formula -G4-R4 where R4 is an alkyl group substituted by a substituent which is part of group 2.

23- Composition according to any one of the previous claims, characterized in that X1 represents a halogen.  
25

24- Composition according to any one of the previous claims, characterized in that X1 represents a -R1 group with R1 being a C1 to C4 alkyl group substituted or not by at least one substituent which is part of group 1 or  
30 group 2.

25- Composition according to any one of the previous claims, characterized in that X1 represents a -G1R1 group with R1 being a C1 to C3 alkyl group substituted or not by at least one substituent which is part of group 1 or group 2.

5

26- Composition according to any one of the previous claims, characterized in that X1 represents a -R1 group with R1 being a C5 to C24 alkyl group substituted or not by at least one substituent which is part of group 1 or group 2.

10

27- Composition according to any one of the previous claims, characterized in that X1 represents a -G1R1 group with R1 being a C4 to C24 alkyl group substituted or not by at least one substituent which is part of group 1 or group 2.

15

28- Composition according to any one of the previous claims, characterized in that X6 represents an oxygen atom.

29- Composition according to any one of the previous claims, characterized in that X1, X3, X4 or X5 represents OC(CH3)2COOR6.

20

30- Composition according to any one of claims 1 to 28, characterized in that X1, X3, X4 or X5 represents SC(CH3)2COOR6.

31- Composition according to any one of the previous claims, characterized in that the derivative is selected in the group consisting of 1-[2-hydroxy-4-chlorophenyl]-3-[4-carboxydimethylmethoxyphenyl]prop-2-en-1-one, 1-[2-hydroxy-4-chlorophenyl]-3-[4-isopropoxyloxycarbonyldimethylmethoxyphenyl]prop-2-en-1-one, 1-[2-hydroxyphenyl]-3-[4-carboxydimethylmethoxyphenyl]prop-2-en-1-one, 1-[2-hydroxyphenyl]-3-[4-isopropoxyloxycarbonyldimethylmethoxyphenyl]prop-2-en-1-one, 1-[2-methylcarbonyloxyphenyl]-3-[4-carboxydimethylmethoxyphenyl]prop-

25

30

2-en-1-one, 1-[2-methylcarbonyloxyphenyl]-3-[4-*isopropyl*  
 oxycarbonyldimethylmethyloxyphenyl]prop-2-en-1-one, 1-[2-hydroxyphenyl]-3-  
 [4-carboxydimethylmethyloxyphenyl]-1-hydroxyiminoprop-2-ene and 1-[2-  
 hydroxyphenyl]-3-[4-*isopropyl*oxycarbonyldimethylmethyloxyphenyl]-1-  
 5 hydroxyiminoprop-2-ene, 1-[2-hydroxy-4-carboxydimethylmethyloxyphenyl]-3-  
 [3,5-di*tert*butyl-4-hydroxyphenyl]prop-2-en-1-one, 1-[2-hydroxy-4-ethyloxy  
 carbonyldimethylmethyloxyphenyl]-3-[3,5-di*tert*butyl-4-hydroxyphenyl]prop-2-en-  
 1-one, 1-[2-hydroxyphenyl]-3-[3-carboxydimethylmethyloxy-4-hydroxy-5-*tert*butyl  
 phenyl]prop-2-en-1-one, 1-[2-hydroxyphenyl]-3-[3-*isopropyl*oxycarbonyldimethyl  
 10 methyloxy-4-hydroxy-5-*tert*butylphenyl]prop-2-en-1-one, 1-[2-hydroxy-4-  
 chlorophenyl]-3-[3-carboxydimethylmethyloxy-4-hydroxy-5-*tert*butylphenyl]prop-  
 2-en-1-one, 1-[2-hydroxy-4-chlorophenyl]-3-[3-  
*isopropyl*oxycarbonyldimethylmethyloxy-4-hydroxy-5-*tert*butylphenyl]prop-2-en-  
 1-one, 1-[2-hydroxyphenyl]-3-[3-carboxydimethylmethyl-4-hydroxy-5-  
 15 *tert*butylphenyl]prop-2-en-1-one, 1-[2-hydroxyphenyl]-3-[3-  
*isopropyl*oxycarbonyldimethylmethyl-4-hydroxy-5-*tert*butyl phenyl]prop-2-en-1-  
 one, 1-[2-hydroxy-4-chlorophenyl]-3-[3-carboxydimethylmethyl-4-hydroxy-5-  
*tert*butylphenyl]prop-2-en-1-one, 1-[2-hydroxy-4-chlorophenyl]-3-[3-  
*isopropyl*oxycarbonyldimethylmethyl-4-hydroxy-5-*tert*butylphenyl]prop-2-en-1-  
 20 one, 1-[2-hydroxy-4-chlorophenyl]-3-[3,5-dimethoxy-4-  
 carboxydimethylmethyloxy]prop-2-en-1-one, 1-[2-hydroxy-4-chlorophenyl]-3-  
 [3,5-dimethoxy-4-*isopropyl*oxycarbonyldimethylmethyloxyphenyl]prop-2-en-1-  
 one, 1-[2-hydroxyphenyl]-3-[3,5-dimethoxy-4-  
 carboxydimethylmethyloxyphenyl]prop-2-en-1-one, 1-[2-hydroxyphenyl]-3-[3,5-  
 25 dimethoxy-4-*isopropyl*oxycarbonyldimethylmethyloxyphenyl]prop-2-en-1-one, 1-  
 [2-hydroxy-4-carboxydimethylmethyloxyphenyl]-3-[3,5-di-methoxy-4-  
 hydroxyphenyl]prop-2-en-1-one, 1-[2-hydroxy-4-  
*isopropyl*oxycarbonyldimethylmethyloxyphenyl]-3-[3,5-dimethoxy-4-  
 hydroxyphenyl]prop-2-en-1-one, 1-[2-hydroxy-4-chlorophenyl]-3-[3,4-dihydroxy-  
 30 5-carboxydimethylmethyloxyphenyl]-2-prop-2-en-1-one, 1-[2-hydroxy-4-  
 chlorophenyl]-3-[3,4-dihydroxy-5-  
*isopropyl*oxycarbonyldimethylmethyloxyphenyl]-2-propen-1-one, 1-[2-hydroxy-4-



carboxydimethylmethyloxyphenyl]-3-[3,5-dimethyl-4-hydroxyphenyl]prop-2-en-1-one,  
 1-[2-hydroxy-4-isopropoxyloxycarbonyldimethylmethyloxyphenyl]-3-[3,5-dimethyl-4-hydroxyphenyl]prop-2-en-1-one, 1-[2-hydroxy-4-chlorophenyl]-3-[3,5-dimethyl-4-carboxydimethylmethyloxyphenyl]prop-2-en-1-one, 1-[2-hydroxy-4-  
 5 chlorophenyl]-3-[3,5-dimethyl-4-isopropoxyloxycarbonyldimethylmethyloxyphenyl]prop-2-en-1-one, 1-[2-hydroxyphenyl]-3-[3,5-dimethyl-4-carboxydimethylmethyloxyphenyl]prop-2-en-1-one,  
 1-[2-hydroxyphenyl]-3-[3,5-dimethyl-4-isopropoxyloxycarbonyldimethylmethyloxyphenyl]prop-2-en-1-one, 1-[2-  
 10 hydroxyphenyl]-3-[3-carboxydimethylmethyloxyphenyl]prop-2-en-1-one, 1-[2-hydroxyphenyl]-3-[3-isopropoxyloxycarbonyldimethylmethyloxyphenyl]prop-2-en-1-one,  
 1-[2-hydroxyphenyl]-3-[4-carboxydimethylmethylthiophenyl]prop-2-en-1-one, 1-[2-hydroxyphenyl]-3-[4-isopropoxyloxycarbonyldimethylmethylthiophenyl]prop-2-en-1-one, 1-[2-mercapto-  
 15 4-methyloxyphenyl]-3-[4-carboxydimethylmethyloxyphenyl]prop-2-en-1-one, 1-[2-mercapto-4-methyloxyphenyl]-3-[4-isopropoxyloxycarbonyldimethylmethyloxyphenyl]prop-2-en-1-one, 1-[2-hydroxy-4-ethoxycarbonyldimethylmethyloxyphenyl]-3-[3,5-ditertbutyl-4-hydroxyphenyl]prop-2-en-1-one,  
 20 1-[2-hydroxy-4-carboxydimethylmethyloxyphenyl]-3-[3,5-dibromo-4-hydroxyphenyl]prop-2-en-1-one, 1-[2-hydroxy-4-carboxydimethylmethyloxyphenyl]-3-[3-hydroxyphenyl]prop-2-en-1-one,  
 1-[2-hydroxy-4-carboxydimethylmethyloxyphenyl]-3-[4-methylthiophenyl]prop-2-en-1-one,  
 25 1-[2-hydroxy-4-carboxydimethylmethyloxyphenyl]-3-[4-methylthiophenyl]prop-2-en-1-one,  
 1-[2,4-dihydroxyphenyl]-3-[4-carboxydimethylmethyloxyphenyl]prop-2-en-1-one, 1-[2-hydroxyphenyl]-3-[4-carboxydimethylmethyloxyphenyl]prop-2-en-1-one,  
 30 1-[4-chlorophenyl]-3-[3,5-dimethyl-4-tertbutyloxycarbonyldimethylmethyloxyphenyl]prop-2-en-1-one,

- 1-[4-chlorophenyl]-3-[3,5-dimethyl-4-isopropoxyloxycarbonyldimethylmethyloxyphenyl]prop-2-en-1-one,  
 1-[4-chlorophenyl]-3-[3,5-dimethyl-4-carboxydimethylmethyloxyphenyl]prop-2-en-1-one,  
 5 1-[2-hydroxy-4-carboxydimethylmethyloxyphenyl]-3-[4-chlorophenyl]prop-2-en-1-one,  
 1-[2-hydroxyphenyl]-3-[4-carboxydimethylmethylthiophenyl]prop-2-en-1-one,  
 1-[4-chloro-2-hydroxyphenyl]-3-[4-carboxydimethylmethylthiophenyl]prop-2-en-1-one,  
 10 1-[4-carboxydimethylmethyloxyphenyl]-3-[3,5-dimethyl-4-hydroxyphenyl]prop-2-en-1-one,  
 1-[4-methylthiophenyl]-3-[4-carboxydimethylmethyloxyphenyl]prop-2-en-1-one,  
 1-[4-carboxydimethylmethyloxyphenyl]-3-[4-chlorophenyl]prop-2-en-1-one,  
 1-[4-carboxydimethylmethylthiophenyl]-3-[4-methylthiophenyl]prop-2-en-1-one,  
 15 1-[2-hydroxy-4-bromophenyl]-3-[3,5-dimethyl-4-carboxydimethylmethyloxyphenyl]prop-2-en-1-one,  
 1-[4-carboxydimethylmethyloxyphenyl]-3-[4-methylthiophenyl]prop-2-en-1-one,  
 1-[4-methylthiophenyl]-3-[3,5-dimethyl-4-tertbutyloxycarbonyldimethylmethyloxyphenyl]prop-2-en-1-one,  
 20 1-[4-methylthiophenyl]-3-[3,5-dimethyl-4-isopropoxyloxycarbonyldimethylmethyloxyphenyl]prop-2-en-1-one,  
 1-[4-methylthiophenyl]-3-[3,5-dimethyl-4-carboxydimethylmethyloxyphenyl]prop-2-en-1-one,  
 1-[2-methoxyphenyl]-3-[3,5-dimethyl-4-tertbutyloxycarbonyldimethylmethyloxyphenyl]prop-2-en-1-one,  
 25 1-[2-methoxyphenyl]-3-[3,5-dimethyl-4-carboxydimethylmethyloxyphenyl]prop-2-en-1-one,  
 1-[4-hexyloxyphenyl]-3-[3,5-dimethyl-4-tertbutyloxycarbonyldimethylmethyloxyphenyl]prop-2-en-1-one,  
 30 1-[4-hexyloxyphenyl]-3-[3,5-dimethyl-4-carboxydimethylmethyloxyphenyl]prop-2-en-1-one,

2-(3,5-dimethyl-4-tertbutyloxycarbonyldimethylmethoxyphenyl)-7-chloro-4H-1-benzopyran-4-one,

2-(3,5-dimethyl-4-carboxydimethylmethoxyphenyl)-7-chloro-4H-1-benzopyran-4-one,

5 1-[2-methoxy-4-chlorophenyl]-3-[3,5-dimethyl-4-tertbutyloxycarbonyldimethylmethoxyphenyl]prop-2-en-1-one,

1-[2-methoxy-4-chlorophenyl]-3-[3,5-dimethyl-4-carboxydimethylmethoxyphenyl]prop-2-en-1-one,

1-[4-heptylphenyl]-3-[3,5-dimethyl-4-

10 tertbutyloxycarbonyldimethylmethoxyphenyl]prop-2-en-1-one,

1-[4-heptylphenyl]-3-[3,5-dimethyl-4-carboxydimethylmethoxyphenyl]prop-2-en-1-one,

1-[4-bromophenyl]-3-[3,5-dimethyl-4-

tertbutyloxycarbonyldimethylmethoxyphenyl]prop-2-en-1-one,

15 1-[4-bromophenyl]-3-[3,5-dimethyl-4-carboxy

dimethylmethoxyphenyl]prop-2-en-1-one,

1-[2-hydroxyphenyl]-3-[3,5-dimethyl-4-isopropoxyloxycarbonyldimethylmethoxyphenyl]prop-2-en-1-one.

20 32. Composition according to any one of claims 1 to 31, characterized in that the pathology related to inflammation is selected in the group consisting of atherosclerosis, allergy, asthma, eczema, psoriasis and pruritus.

25 33. Composition according to any one of claims 1 to 31, characterized in that the pathology related to neurodegeneration is Alzheimer's disease or Parkinson's disease.

30 34. Composition according to any one of claims 1 to 31, characterized in that the pathology related to deregulations of lipid and/or glucose metabolism is selected in the group consisting of diabetes, atherosclerosis and obesity.

35. Composition according to any one of claims 1 to 31, characterized in that the pathology related to cell proliferation and/or differentiation is selected in the group consisting of carcinogenesis, psoriasis and atherosclerosis.

5           36. Use of a compound represented by formula (I) such as defined in claim 1 for preparing a pharmaceutical composition for the treatment or prophylaxis of a pathology related to inflammation, neurodegeneration, cell proliferation and/or differentiation and/or ageing of the skin or central nervous system and more particularly one or more allergies, asthma, eczema, psoriasis,  
10           pruritus, Alzheimer's disease, Parkinson's disease or carcinogenesis, the compounds represented by formula (I) possibly including compounds with formula (I) in which :

-  $X_1$ ,  $X_2$ ,  $X_3$  and  $X_5$  each represent a hydrogen atom,  $X_6$  represents an oxygen atom and  $X_4$  represents a group corresponding to the formula  $-O-CR_8R_9-COOR_{10}$ , where  $R_8$  and  $R_9$ , which are the same or different, represent a C1 to C2 alkyl group (comprising one or two carbon atoms), and  $R_{10}$  represents a hydrogen atom or a C1 to C7 alkyl group, or

-  $X_2$ ,  $X_3$  and  $X_5$  each represent a hydrogen atom,  $X_1$  represents a halogen atom or a R1 or -G1R1 group, where R1 represents an unsubstituted C1 to C2 alkyl group and G1 represents an oxygen atom,  $X_6$  represents an oxygen atom and  $X_4$  represents a group corresponding to the formula  $-O-CR_{11}R_{12}-COOR_{10}$ , where  $R_{11}$  and  $R_{12}$ , which are the same or different, represent a hydrogen atom or a C1 to C2 alkyl group, and  $R_{10}$  represents a hydrogen atom or a C1 to C7 alkyl group.

25

37. Use of a compound represented by formula (I) such as defined in claim 1 for preparing a pharmaceutical composition for the treatment or prophylaxis of a pathology related to neurodegeneration, deregulations of lipid and/or glucose metabolism, cell proliferation and/or differentiation and/or ageing  
30           of the skin or central nervous system, the compounds represented by formula (I) possibly including compounds with formula (I) in which  $X_2$  represents a

hydrogen atom and  $X_1$  represents  $-G_1R_1$  where  $G_1$  represents an oxygen atom and  $R_1$  represents  $CH_2COOH$ .